

In the Claims:

In compliance with the guidelines for making amendments, Applicants present all pending claims with status indicators.

Claims 59-120 are pending. Please cancel claims 59-120 and add new claims 121-145 as follows:

Claims 1-120 (CANCELLED)

121. (NEW) A recombinant, double-stranded, adenovirus vector where the first strand comprises:

- a. an adenovirus left inverted terminal repeat sequence;
- b. an adenovirus packaging sequence;
- c. a first adenoviral-associated inverted terminal repeat sequence;
- d. a first inverted repeat sequence;
- e. a heterologous promoter sequence which mediates transcription in a direction towards the adenoviral left inverted terminal repeat sequence in step a;
- f. a foreign gene sequence;
- g. a second inverted repeat sequence;
- h. a second adenoviral-associated inverted terminal repeat sequence;
- i. a nucleotide sequence that mediates replication of an adenovirus in a transduced cell; and
- j. an adenovirus right inverted terminal repeat sequence

and wherein the second strand comprises a nucleotide sequence encoding a modified adenoviral fiber protein which alters the tropism of the adenovirus

vector, and wherein the modified adenoviral fiber protein is a modified fiber knob, a modified fiber tail or a modified fiber shaft.

122. (NEW) A recombinant, double-stranded, adenovirus vector where the first strand comprises:

- a. an adenovirus left inverted terminal repeat sequence;
- b. an adenovirus packaging sequence;
- c. a first adenoviral-associated inverted terminal repeat sequence;
- d. a first inverted repeat sequence;
- e. a heterologous promoter sequence which mediates transcription in a direction away from the adenoviral left inverted terminal repeat sequence in step a;
- f. a foreign gene sequence;
- g. a second inverted repeat sequence;
- h. a second adenoviral-associated inverted terminal repeat sequence;
- i. a nucleotide sequence that mediates replication of an adenovirus in a transduced cell; and
- j. an adenovirus right inverted terminal repeat sequence

and wherein the second strand comprises a nucleotide sequence encoding a modified adenoviral fiber protein which alters the tropism of the adenovirus vector, and wherein the modified adenoviral fiber protein is a modified fiber knob, a modified fiber tail or a modified fiber shaft.

123. (NEW) The adenoviral vector of claim 121 or 122, wherein the modified fiber knob, the modified fiber tail or the modified fiber shaft is from an adenoviral serotype that differs from the serotype of the left or right adenoviral inverted terminal repeat sequence.

124. (NEW) The adenoviral vector of claim 121 or 122, wherein the modified fiber knob, the modified fiber tail or the modified fiber shaft is from adenoviral serotypes Ad3, Ad7, Ad9, Ad11 or Ad35.
125. (NEW) The adenoviral vector of claim 121 or 122, wherein the modified fiber knob binds a cell surface protein on a target cell of interest.
126. (NEW) The adenoviral vector of claim 121 or 122, wherein the modified fiber knob is modified in the G-H loop region or H-I loop region.
127. (NEW) The adenoviral vector of claim 121 or 122, wherein the modified fiber knob comprises a heterologous peptide ligand which replaces the G-H loop region or H-I loop region.
128. (NEW) The adenoviral vector of claim 127, wherein the heterologous peptide ligand is an RI or RII protein from malaria circumsporozoite surface protein (CS).
129. (NEW) The adenoviral vector of claim 128, wherein the RI protein from malaria circumsporozoite surface protein (CS) comprises the amino acid sequence KLKQPG.
130. (NEW) The adenoviral vector of claim 128, wherein the RII protein from malaria circumsporozoite surface protein (CS) comprises the amino acid sequence EWSPCSVTCGNGIQVRIK.
131. (NEW) The adenoviral vector of claim 127, wherein the heterologous peptide ligand comprises the amino acid sequence:
 - a. LGGKPDQ;
 - b. LNGCGSC;

- c. LNFCFSFC; or
- d. LNGCGXXXXXXXXXXGC.

- 132. (NEW) The adenoviral vector of claim 121 or 122 which infects hepatocytes, bone marrow cells, stem cells or breast cancer cells.
- 133. (NEW) The adenoviral vector of claim 121 or 122, wherein the modified fiber shaft has a shortened length.
- 134. (NEW) The adenoviral vector of claim 121 or 122, wherein the adenoviral packaging sequence and the left and right adenoviral inverted terminal repeat sequences are from the same adenoviral serotype.
- 135. (NEW) The adenoviral vector of claim 121 or 122, wherein the adenoviral packaging sequence and the left and right adenoviral inverted repeat sequences are from serotype Ad5.
- 136. (NEW) The adenoviral vector of claim 121 or 122, wherein the foreign gene sequence encodes a therapeutic gene product, a selectable gene product, or a reporter gene product.
- 137. (NEW) The adenoviral vector of claim 121 or 122, wherein the therapeutic gene product is gamma globin or human alpha-1 anti-trypsin.
- 138. (NEW) The adenoviral vector of claim 121 or 122, wherein the selectable gene product is neomycin, ampicillin, penicillin, tetracycline or gentamycin.
- 139. (NEW) The adenoviral vector of claim 121 or 122, wherein the reporter gene product is green fluorescent protein, beta galactosidase or alkaline phosphatase.

140. (NEW) The adenoviral vector of claim 121 or 122, further comprising an insulator element sequence.
141. (NEW) The adenoviral vector of claim 121 or 122, further comprising a bacterial origin of replication.
142. (NEW) The adenoviral vector of claim 121 or 122, further comprising a nucleotide sequence encoding a rep78 protein.
143. (NEW) The adenoviral vector of claim 121 or 122, wherein the gene sequence that mediates replication of an adenovirus in the transduced cell is selected from a group consisting of E2 and E4; E1, E2 and E4; E2 and E4; and E2, E3 and E4.
144. (NEW) The adenoviral vector of claim 121 or 122, wherein the foreign gene sequence comprises a 5' portion of the foreign gene sequence.
145. (NEW) The adenoviral vector of claim 121 or 122, wherein the foreign gene sequence comprises a 3' portion of the foreign gene sequence.